

# Heuristic Analysis

## Custom Score

	Description
custom_score	Use heuristic value opposite Open Move
custom_score2	Multiply a random number (0 ~ 1) and a score to square of the distance from the center of the board to the position of the player.
custom_score3	Multiply a random number (0 ~ 1) and the number of moves available to the two players.

## Results

I tried 100 attempts. Using a random number like custom\_store3 rather than a simple An "improved" evaluation function raised the score.

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Playing Matches									
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Match #	Opponent	AB_Improved		AB_Custom		AB_Custom_2		AB_Custom_3	
		Won	Lost	Won	Lost	Won	Lost	Won	Lost
1	Random	94	6	91	9	95	5	94	6
2	MM_Open	78	22	69	31	74	26	79	21
3	MM_Center	88	12	86	14	84	16	89	11
4	MM_Improved	68	32	70	30	64	36	77	23
5	AB_Open	46	54	49	51	46	54	59	41
6	AB_Center	53	47	52	48	61	39	59	41
7	AB_Improved	47	53	40	60	52	48	50	50
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Win Rate:		67.7%		65.3%		68.0%		72.4%	

## Conclusion

It is good to choose AB\_Custom\_3 for the following reasons.

- Just the number of own the number of moves available or the distance from the center is not enough as an evaluation value.
- It seems good to use the number of move available opponent and own.
- It is better to add random elements